

REMARKS

The present Amendment amends claims 34-37. Therefore, the present application has pending claims 34-37.

35 U.S.C. §103 Rejections

Claims 34-37 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,012,060 to Loaiza, et al. ("Loaiza") in view of U.S. Patent No. 5,289,397 to Clark, et al. ("Clark"). This rejection is traversed for the following reasons. Applicants submit that the features of the present invention, as now more clearly recited in claims 34-37, are not taught or suggested by Loaiza or Clark, whether taken individually or in combination with each other as suggested by the Examiner. Therefore, Applicants respectfully request the Examiner to reconsider and withdraw this rejection.

Amendments were made to the claims to more clearly describe the features of the present invention. Specifically, the claims were amended to more clearly describe that the present invention is directed to a database management method and a database management system for managing data in a database as recited, for example, in independent claims 34-37.

Claims 34 and 36

The present invention, as recited in claim 34 and as similarly recited in claim 36, provides a database management method and system for managing data in a database having a plurality of data areas of storage in a data management system. The method includes a step of adding bookmark information in each of the plurality

of data areas. The data areas have data pieces generated in time series. The bookmark information includes first time information, at which time the data pieces were generated, and status information of an empty status of data in each data area. The method also includes a step of reading the status information in response to a request for storing data in a data area. The status information is read to determine whether the data can be stored in the data area. When the status indicates an empty status, a step of storing the data in the data area and storing second time information at which data is stored in the data area in the bookmark information of the data area. The status information is then changed to indicate that the data area is not empty. Another step of the method includes providing, in response to a retrieval request for data stored within a time period in the database, data from a data area when the second time information of the bookmark information is determined to be within the time period after reading the bookmark information. The prior art does not disclose all these features.

The above described features of the present invention, as now more clearly recited in the claims, are not taught or suggested by any of the references of record. Specifically, the features are not taught or suggested by either Loaiza or Clark, whether taken individually or in combination with each other.

Loaiza is directed to data processing systems, and more specifically, to sharing data between multiple nodes in a distributed system. However, Loaiza does not teach or suggest a database management method and a database management

system for managing data in a database, as recited in claims 34 and 36 of the present invention.

Loaiza discloses the concept of pings, which includes circumstances where information stored in the buffer cache of one node is required by a transaction in another node. Pings are very expensive and often involve writing the information from one cache to disk, then from the disk to another cache, and numerous lock-related operations. Loaiza discloses a method for reducing the number of pings that occur in a multiple node system. In one aspect of the invention, requests that constitute pings and that are likely to cause additional pings are detected. The servicing of a request that is likely to cause one or more additional pings is deferred until a service enabling condition occurs. In another aspect of the invention, situations are detected where, by further updating a data block before shipping the data block, use of resources on the remote node requesting the data block can be reduced. In these situations, the servicing of the request for the data block is deferred until a service enabling condition occurs.

The method of the present invention, as recited in claim 34, and as similarly recited in claim 36, includes a step of adding bookmark information in each of the plurality of data areas. The data areas have data pieces generated in time series and the bookmark information includes first time information at which the data pieces were generated and status information of an empty status of data in each data area. As conceded by the Examiner, Loaiza does not disclose status information indicating an empty status of data in each data area. In addition to this feature, however,

Applicants submit that Loaiza does not disclose where the bookmark information includes first time information at which the data pieces were generated. To support the assertion that Loaiza disclose adding bookmark information in each of the plurality of data areas, the Examiner cites Fig. 1c, which is an illustration of a prior art data block. As described in column 1, lines 30-42, the status flag indicates whether the transaction is active or committed, and if a transaction is marked as committed, a commit time is indicated. The status flag and commit time are quite different from the status information and first time information of the present invention. Specifically, the status flag of Loaiza does not indicate an empty status and the commit time of Loaiza does not indicate a first time at which the data pieces were generated, as in the present invention.

Another feature of the present invention, as recited in claim 34 and as similarly recited in claim 36, includes a step of reading, in response to a request for storing data in a data area, the status information to decide whether the data can be stored in the data area. When the status indicates empty status, the method performs the step of storing the data in the data area and storing second time information at which data is stored in the data area in the bookmark information of the data area. The status information is then changed to indicate that the data area is not empty. Loaiza does not disclose this feature. As conceded by the Examiner, Loaiza does not disclose where the status information is changed to indicate that the data area is not empty. Furthermore, Applicants submit that Loaiza does not disclose storing second time information at which data is stored in the data area in

the bookmark information of the data area. To support the assertion that Loaiza discloses reading the status information, in response to a request for storing data in a data area, the Examiner cites Fig. 1c, which is an illustration of a prior art data block. Contrary to the Examiner's assertions, Fig. 1c does not disclose reading the status information, as claimed. For example, the present invention provides that second time information is stored in the bookmark information of the data area. Loaiza does not disclose storing second time information of the data area in the bookmark information of the data area, in the manner claimed. Accordingly, Loaiza does not disclose the claimed feature.

Yet another feature of the present invention, as recited in claim 34 and as similarly recited in claim 36, includes a step of providing data from a data area in response to a retrieval request for data stored within a time period in the database. The data is provided when the second time information of the bookmark information is determined to be within the time period after reading the bookmark information. Loaiza does not disclose this feature. As conceded by the Examiner, Loaiza does not disclose where the status information indicates that the data area is empty, as claimed. However, to support the assertion that Loaiza discloses a step of providing data in response to a retrieval request for data stored within a time period in the database, the Examiner cites Fig. 1c. Contrary to the Examiner's assertions, Fig. 1c does not disclose providing data in response to a retrieval request, and further does not disclose providing the data from a data area when the second time information of the bookmark information is determined to be within the time period after reading the

bookmark information. As described in column 1, lines 30-42, if a transaction is marked as committed, a commit time is indicated. The commit time of Loaiza is quite different from the time period or the second time information of the present invention. In Loaiza, data is not provided, in response to a retrieval request for data stored within a time period, and the data is not provided when the second time information is within the time period.

Therefore, Loaiza fails to teach or suggest "adding bookmark information in each of said plurality of data areas, said data areas having data pieces generated in time series and said bookmark information including first time information at which said data pieces were generated and status information of an empty status of data in each data area" as recited in claim 34 and as similarly recited in claim 36.

Furthermore, Loaiza fails to teach or suggest "reading, in response to a request for storing data in a data area, said status information to decide whether said data can be stored in said data area, and when said status indicates an empty status, storing said data in said data area and storing second time information at which data is stored in said data area in said bookmark information of said data area, wherein said status information is changed to indicate that said data area is not empty" as recited in claim 34 and as similarly recited in claim 36.

Even further, Loaiza fails to teach or suggest "providing, in response to a retrieval request for data stored between a time period in said database, data from a data area when said second time information of said bookmark information is

determined to be within said time period after reading said bookmark information" as recited in claim 34 and as similarly recited in claim 36.

The above noted deficiencies of Loaiza are not supplied by any of the other references, particularly Clark. Therefore, combining the teachings of Clark with Loaiza still fails to teach or suggest the features of the present invention as now more clearly recited in the claims.

Clark discloses a high-speed modulo exponentiator device that uses a computation algorithm and integrated circuit to perform a modulo exponentiation function. Clark does not teach or suggest a database management method and a database management system for managing data in a database, as recited in claims 34 and 36 of the present invention.

Clark's high-speed modulo exponentiator is a circuit for performing the modulo exponentiation function commonly used in certain classes of encryption systems. The invention is directed to an improved algorithm for performing the modulo exponentiation function and implementation of the corresponding logic in a high-speed gallium arsenide integrated circuit.

Clark's system, which is in a field entirely different from that of the present invention, is nonanalogous art. As provided in MPEP 2141.01(a), a reference relied upon under 35 U.S.C. §103 must be analogous prior art. Specifically, "the reference must either be in the field of Applicants' endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). The U.S.

Patent and Trademark Office classified Clark's high-speed modulo exponentiator device under Electrical Computers: Arithmetic Processing and Calculating (Class 708). This class has no relationship to the subject matter of the present invention, which has been classified under Data Processing: Database and File Management or Data Structures (Class 707). Therefore, Applicants submit that Clark is not in the field of Applicants' endeavor. Furthermore, Clark is not reasonably pertinent to the particular problem with which the inventor was concerned. Therefore, this rejection should be withdrawn.

In addition to being nonanalogous art, Clark does not supply the deficiencies as previously discussed regarding Loaiza. Therefore, the combination of Clark and Loaiza does not provide the invention, as claimed.

For example, the method of the present invention, as recited in claim 34, and as similarly recited in claim 36, includes a step of adding bookmark information in each of the plurality of data areas. The data areas have data pieces generated in time series and the bookmark information includes first time information at which the data pieces were generated and status information of an empty status of data in each data area. In the Office Action, the Examiner relies upon Clark for teaching an empty status of data in a data area, citing column 27, lines 1-15. As described in the cited text, Clark discloses where a counter indicates zero bits when a second buffer is empty. Clark does not disclose the remaining deficient features of Loaiza, namely, where the bookmark information includes first time information at which the data

pieces were generated. Therefore, Clark does not disclose adding bookmark information in the manner claimed.

Another feature of the present invention, as recited in claim 34 and as similarly recited in claim 36, includes a step of reading, in response to a request for storing data in a data area, the status information to decide whether the data can be stored in the data area. When the status indicates empty status, the method performs the step of storing the data in the data area and storing second time information at which data is stored in the data area in the bookmark information of the data area. The status information is then changed to indicate that the data area is not empty. In the Office Action, the Examiner relies upon Clark for teaching an empty status of data in a data area, citing column 27, lines 1-15. As described in the cited text, Clark discloses where a counter indicates zero bits when a second buffer is empty. Clark does not disclose the remaining deficient features of Loaiza, namely, a step of storing second time information at which data is stored in the data area in the bookmark information of the data area. Therefore, Clark does not disclose reading the status information in response to a request for storing data, in the manner claimed.

Yet another feature of the present invention, as recited in claim 34 and as similarly recited in claim 36, includes a step of providing data from a data area in response to a retrieval request for data stored within a time period in the database. The data is provided when the second time information of the bookmark information is determined to be within the time period after reading the bookmark information. In

the Office Action, the Examiner relies upon Clark for teaching an empty status of data in a data area, citing column 27, lines 1-15. As described in the cited text, Clark discloses where a counter indicates zero bits when a second buffer is empty. Clark does not disclose the remaining deficient features of Loaiza, namely, providing data in response to a retrieval request, and further does not disclose providing the data from a data area when the second time information of the bookmark information is determined to be within the time period after reading the bookmark information. Accordingly, Clark does not disclose providing data from a data area, in response to a retrieval request for data stored within a time period, in the manner claimed.

Therefore, Clark fails to teach or suggest "adding bookmark information in each of said plurality of data areas, said data areas having data pieces generated in time series and said bookmark information including first time information at which said data pieces were generated and status information of an empty status of data in each data area" as recited in claim 34 and as similarly recited in claim 36.

Furthermore, Clark fails to teach or suggest "reading, in response to a request for storing data in a data area, said status information to decide whether said data can be stored in said data area, and when said status indicates an empty status, storing said data in said data area and storing second time information at which data is stored in said data area in said bookmark information of said data area, wherein said status information is changed to indicate that said data area is not empty" as recited in claim 34 and as similarly recited in claim 36.

Even further, Clark fails to teach or suggest “providing, in response to a retrieval request for data stored between a time period in said database, data from a data area when said second time information of said bookmark information is determined to be within said time period after reading said bookmark information” as recited in claim 34 and as similarly recited in claim 36.

Claims 35 and 37

The present invention, as recited in claim 35 and as similarly recited in claim 37, provides a database management method and system for managing data in a database having a plurality of data areas of storage in a data management system. The method includes a step of adding bookmark information in each of the plurality of data areas. The data areas have data pieces generated in time series. The bookmark information includes first time information, at which time the data pieces were generated, and status information of an empty status of data in each data area. The method also includes a step of reading the status information in response to a request for storing data in a data area. The status information is read to determine whether the data can be stored in the data area. When the status indicates an empty status, a step of storing the data in the data area and storing second time information at which data is stored in the data area in the bookmark information of the data area. The status information is then changed to indicate that the data area is not empty. Another step of the method includes setting the status information in response to a request for deletion of data stored within a time period in the database. The status information indicates that the data area is empty when the second time

information of the bookmark information is determined to be within the time period after reading the bookmark information. The prior art does not disclose all these features.

The above described features of the present invention, as now more clearly recited in the claims, are not taught or suggested by any of the references of record. Specifically, the features are not taught or suggested by either Loaiza or Clark, whether taken individually or in combination with each other.

As previously discussed, Loaiza is directed to data processing systems, and more specifically, to sharing data between multiple nodes in a distributed system. However, Loaiza does not teach or suggest a database management method and a database management system for managing data in a database, as recited in claims 35 and 37 of the present invention.

The method of the present invention, as recited in claim 35, and as similarly recited in claim 37, includes a step of adding bookmark information in each of the plurality of data areas. The data areas have data pieces generated in time series and the bookmark information includes first time information at which the data pieces were generated and status information of an empty status of data in each data area. As conceded by the Examiner, Loaiza does not disclose status information indicating an empty status of data in each data area. As previously discussed, in addition to this feature, Loaiza does not disclose where the bookmark information includes first time information at which the data pieces were generated. More specifically, the status flag of Loaiza does not indicate an empty status and the commit time of

Loaiza does not indicate a first time at which the data pieces were generated, as in the present invention.

Another feature of the present invention, as recited in claim 35 and as similarly recited in claim 37, includes a step of reading, in response to a request for storing data in a data area, the status information to decide whether the data can be stored in the data area. When the status indicates empty status, the method performs the step of storing the data in the data area and storing second time information at which data is stored in the data area in the bookmark information of the data area. The status information is then changed to indicate that the data area is not empty. Loaiza does not disclose this feature. As conceded by the Examiner, Loaiza does not disclose where the status information is changed to indicate that the data area is not empty. As previously discussed, Loaiza also fails to disclose storing second time information at which data is stored in the data area in the bookmark information of the data area, in the manner claimed.

Yet another feature of the present invention, as recited in claim 35 and as similarly recited in claim 37, includes a step of setting the status information in response to a request for deletion of data stored within a time period in the database. The status information indicates that the data area is empty when the second time information of the bookmark information is determined to be within the time period after reading the bookmark information. Loaiza does not disclose this feature, and the Examiner provides no support for the assertion that Loaiza discloses this feature. As described in column 1, lines 30-42, if a transaction is marked as committed, a

commit time is indicated. The commit time of Loaiza is quite different from the time period or the second time information of the present invention. In Loaiza, status information is not set in response to a request for deletion of data stored within a time period in the database, and the status information is not set when the second time information of the bookmark information is determined to be within the time period, in the manner claimed.

Therefore, Loaiza fails to teach or suggest “adding bookmark information in each of said plurality of data areas, said data areas having data pieces generated in time series and said bookmark information including first time information at which said data pieces were generated and status information of an empty status of data in each data area” as recited in claim 35 and as similarly recited in claim 37.

Furthermore, Loaiza fails to teach or suggest “reading, in response to a request for storing data in a data area, said status information to decide whether said data can be stored in said data area, and when said status indicates an empty status, storing said data in said data area and storing second time information at which data is stored in said data area in said bookmark information of said data area, wherein said status information is changed to indicate that said data area is not empty” as recited in claim 35 and as similarly recited in claim 37.

Even further, Loaiza fails to teach or suggest “setting, in response to a request for deletion of data stored within a time period in said database, said status information to indicate that said data area is empty when said second time information of said bookmark information is determined to be within said time period”

after reading said bookmark information" as recited in claim 35 and as similarly recited in claim 37.

The above noted deficiencies of Loaiza are not supplied by any of the other references, particularly Clark. Therefore, combining the teachings of Clark with Loaiza still fails to teach or suggest the features of the present invention as now more clearly recited in the claims.

As previously discussed, Clark discloses a high-speed modulo exponentiator device that uses a computation algorithm and integrated circuit to perform a modulo exponentiation function. Clark does not teach or suggest a database management method and a database management system for managing data in a database, as recited in claims 35 and 37 of the present invention.

Also, as previously discussed, Clark's system, which is in a field entirely different from that of the present invention, is nonanalogous art. As provided in MPEP 2141.01(a), a reference relied upon under 35 U.S.C. §103 must be analogous prior art. In addition to being nonanalogous art, Clark does not supply the deficiencies as previously discussed regarding Loaiza. Therefore, the combination of Clark and Loaiza does not provide the invention, as claimed.

For example, the method of the present invention, as recited in claim 35, and as similarly recited in claim 37, includes a step of adding bookmark information in each of the plurality of data areas. The data areas have data pieces generated in time series and the bookmark information includes first time information at which the data pieces were generated and status information of an empty status of data in

each data area. In the Office Action, the Examiner relies upon Clark for teaching an empty status of data in a data area, citing column 27, lines 1-15. As described in the cited text, Clark discloses where a counter indicates zero bits when a second buffer is empty. As previously discussed, Clark does not disclose the remaining deficient features of Loaiza, namely, where the bookmark information includes first time information at which the data pieces were generated. Therefore, Clark does not disclose adding bookmark information in the manner claimed.

Another feature of the present invention, as recited in claim 35 and as similarly recited in claim 37, includes a step of reading, in response to a request for storing data in a data area, the status information to decide whether the data can be stored in the data area. When the status indicates empty status, the method performs the step of storing the data in the data area and storing second time information at which data is stored in the data area in the bookmark information of the data area. The status information is then changed to indicate that the data area is not empty. In the Office Action, the Examiner relies upon Clark for teaching an empty status of data in a data area, citing column 27, lines 1-15. As described in the cited text, Clark discloses where a counter indicates zero bits when a second buffer is empty. As previously discussed, Clark does not disclose the remaining deficient features of Loaiza, namely, a step of storing second time information at which data is stored in the data area in the bookmark information of the data area. Therefore, Clark does not disclose reading the status information in response to a request for storing data, in the manner claimed.

Yet another feature of the present invention, as recited in claim 35 and as similarly recited in claim 37, includes a step of setting the status information in response to a request for deletion of data stored within a time period in the database. The status information indicates that the data area is empty when the second time information of the bookmark information is determined to be within the time period after reading the bookmark information. In the Office Action, the Examiner provides no indication of what is relied upon in Clark for disclosing this feature. Based on the rejection of claims 34 and 36, it is assumed that the Examiner relies upon Clark for teaching an empty status of data in a data area, citing column 27, lines 1-15. As described in the cited text, Clark discloses where a counter indicates zero bits when a second buffer is empty. Clark does not disclose the remaining deficient features of Loaiza, namely, setting status information in response to a request for deletion of data stored within a time period in the database, and setting the status information when the second time information of the bookmark information is determined to be within the time period, in the manner claimed.

Therefore, Clark fails to teach or suggest “adding bookmark information in each of said plurality of data areas, said data areas having data pieces generated in time series and said bookmark information including first time information at which said data pieces were generated and status information of an empty status of data in each data area” as recited in claim 35 and as similarly recited in claim 37.

Furthermore, Clark fails to teach or suggest “reading, in response to a request for storing data in a data area, said status information to decide whether said data

can be stored in said data area, and when said status indicates an empty status,
storing said data in said data area and storing second time information at which data
is stored in said data area in said bookmark information of said data area, wherein
said status information is changed to indicate that said data area is not empty” as
recited in claim 35 and as similarly recited in claim 37.

Even further, Clark fails to teach or suggest “setting, in response to a request
for deletion of data stored within a time period in said database, said status
information to indicate that said data area is empty when said second time
information of said bookmark information is determined to be within said time period
after reading said bookmark information” as recited in claim 35 and as similarly
recited in claim 37.

Both Loaiza and Clark suffer from the same deficiencies relative to the
features of the present invention as recited in the claims. Therefore, combining the
teachings of Loaiza and Clark in the manner suggested by the Examiner does not
render obvious the features of the present invention as now more clearly recited in
claims 34-37. Accordingly, reconsideration and withdrawal of the 35 U.S.C. §103(a)
rejection of claims 34-37 as being unpatenatable over Loaiza in view of Clark is
respectfully requested.

The remaining references of record have been studied. Applicants submit
that they do not supply any of the deficiencies noted above with respect to the
references used in the rejection of claims 34-37.

U.S. Application No. 10/084,222

In view of the foregoing amendments and remarks, Applicants submit that claims 34-37 are in condition for allowance. Accordingly, early allowance of such claims is respectfully requested.

To the extent necessary, Applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, or credit any overpayment of fees, to the deposit account of Mattingly, Stanger, Malur & Brundidge, P.C., Deposit Account No. 50-1417 (referencing attorney docket no. 500.36133CC2).

Respectfully submitted,

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